



**SPP**

*Southwest  
Power Pool*

***System Impact Study SPP-2002-142  
For Transmission Service  
Requested By  
Xcel Energy***

***From OKGE to SPS***

***For a Reserved Amount Of 50MW  
From 7/1/02  
To 9/1/02***

***SPP Transmission Planning***

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## **1. Executive Summary**

Xcel Energy has requested a system impact study for Monthly Firm transmission service from OKGE to SPS. The period of the transaction is from 7/1/02 to 9/1/02. The request is for reservation 381543 for the amount of 50MW.

The 50MW transaction from OKGE to SPS has a positive response on the La Cygne to Stillwell, La Cygne to West Gardner flowgate (LacStiLacWgr) and the Fort Smith to Arkansas Nuclear One undervoltage flowgate (FtsthAnoVlt). The impact of this transfer on the La Cygne to Stillwell, 345kV line will cause an overload for the loss of the La Cygne to West Gardner, 345kV line during the time period of this request. The impact of this transfer will cause undervoltage limits to be exceeded for the Fort Smith to Arkansas Nuclear One, 500kV line. To provide the ATC that is necessary for this transfer, the impact on these flowgates must be relieved.

It has been determined that there is not sufficient time available to complete any upgrades to the system that would relieve these flowgates.

The Owner of existing firm transmission reservation 381165 (SPS to AMRN) agrees to curtail said service to allow this new request for monthly service to flow. Therefore the request for monthly service from OKGE to SPS will be accepted with this limitation.

## **2. Introduction**

Xcel Energy has requested an impact study for transmission service from OKGE to SPS.

An option available to relieve the impact on these flowgates caused by the 50MW OKGE to SPS transfer is curtailment of existing service. In this method, the impact of curtailed service on a particular flowgate can be allotted to the new service requested. As long as sufficient impact is available from the curtailed service, the new service can be allowed to flow in place of the curtailed service.

The La Cygne to Stillwell, La Cygne to West Gardner flowgate has been identified as a limiting constraint for the OKGE to SPS transfer. For this flowgate, the La Cygne to Stillwell, 345kV line is monitored during the loss of the La Cygne to West Gardner, 345kV line. It has been determined that the 50MW transfer from OKGE to SPS will cause the La Cygne to Stillwell line to overload should the loss of the La Cygne to West Gardner line occur.

The 50MW transfer is also limited by the Fort Smith to Arkansas Nuclear One undervoltage flowgate (FtsmthAnoVlt). For this flowgate, the Fort Smith to Arkansas Nuclear One, 500kV line is monitored for undervoltage. The OKGE to SPS transfer will cause undervoltage limits to be exceeded for the Fort Smith to Arkansas Nuclear One, 500kV line.

There are no facility upgrades available to relieve these flowgates that can be completed in the time period available. This impact study reviews curtailment as an option to relieving the transmission constraints.

### **3. Study Methodology**

#### **A. Description**

Southwest Power Pool determined the firm transmission reservations that if curtailed would affect or relieve the transmission constraint and the amount of transmission capacity available through such curtailment.

#### **B. Model Updates**

The 2001 Southwest Power Pool Summer Peak model was used for the study. This model was updated to reflect the most current information available.

#### **C. Transfer Analysis**

Using the short-term calculator, the limiting constraint for the transfer is identified. The response factor of the transfer on that constraint is also determined.

The product of the transfer amount and the response factor is the impact of the transfer on a limiting flowgate that must be relieved. With multiple flowgates affected by a transfer, relief of the largest impact will also provide relief of smaller impacts.

## **4. Study Results**

Curtailement of existing firm transmission reservations can provide for affect or relief on the concerning flowgates.

The distribution factor of the La Cygne to Stillwell, La Cygne to West Gardner flowgate for the OKGE to SPS transfer is 6.5% for July and 5.8% for August. The 3.25MW and 2.9MW impacts for July and August respectively can be relieved by curtailement of existing firm transmission reservation 381165 (SPS to AMRN) which offers a 7.0% response factor for July and 7.2% for August. The impact of the 50MW OKGE to SPS transfer is relieved by curtailement of 47MW of 381165.

The response factor of the Fort Smith to Arkansas Nuclear One undervoltage flowgate (FtsthAnoVlt) for the OKGE to SPS transfer is 5.3% for July. This flowgate is not a constraint for the transfer in August. The 2.56MW impact for July can be relieved by curtailement of existing firm transmission reservation 381165 (SPS to AMRN), which offers a 12.7% response factor for July. The impact of the 50MW OKGE to SPS transfer is relieved by curtailement of 21MW of 381165.

## **5. Conclusion**

Southwest Power Pool determined the firm transmission reservations that if curtailed would affect or relieve the transmission constraint and the amount of transmission capacity available through such curtailment. The Owner of existing firm transmission reservation 381165 (SPS to AMRN) agrees to curtail said service to allow this new request for monthly service to flow. Therefore the request for monthly service from OKGE to SPS will be accepted for the requested transaction period with this limitation.